Comparisons of Job Characteristics

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Engineers (17-2131)

Compare Knowledge
Compare Skills
Compare Abilities
Compare Detailed Work Activities
Compare Tools and Technologies

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 76

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Engineering and Technology	5.7	18.9	10.2	<<	Extensive education and/or training may be required
Chemistry	4.8	15.3	18.6	>	Current knowledge level is likely sufficient
Physics	4.3	10.6	9.6	<	Expanded education and/or training may be required
Design	5.2	7.9	2.3	<<	Extensive education and/or training may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 75

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Science	4.5	13.0	13.8	0	Current skill level may be sufficient
Complex Problem Solving	9.1	12.0	9.3	<<	Extensive development of skills in this area may be required
Operations Analysis	5.0	11.7	6.8	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 89

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Oral Expression	12.4	15.3	11.2	<<	Extensive improvement in abilities may be required
Problem Sensitivity	11.1	14.7	11.4	<<	Extensive improvement in abilities may be required
Deductive Reasoning	10.6	14.2	12.8	<	Some improvement in abilities may be required
Written Comprehension	11.0	14.2	13.5	0	Current ability level may be sufficient
Inductive Reasoning	10.2	13.9	12.8	0	Current ability level may be sufficient
Written Expression	9.8	13.8	12.0	<	Some improvement in abilities may be required
Category Flexibility	9.0	11.5	11.6	0	Current ability level may be sufficient
Originality	7.6	10.6	7.7	<<	Extensive improvement in abilities may be required
Mathematical Reasoning	6.3	10.2	8.8	<	Some improvement in abilities may be required
Number Facility	6.3	9.2	8.6	0	Current ability level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 84

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Engineers (17-2131)

Work Activities	Exclusivity of Activity
Analyze scientific research data or investigative findings	27
Collect scientific or technical data	30
Communicate technical information	4
Compile numerical or statistical data	38
Conduct analyses to determine physical properties of materials	80
Conduct laboratory research or experiments	57
Conduct standardized qualitative laboratory analyses	62
Conduct standardized quantitative laboratory analyses	62
Create mathematical or statistical diagrams or charts	43
Design manufacturing processes or methods	77
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Evaluate manufacturing or processing systems	68
Explain complex mathematical information	30

Follow safe waste disposal procedures	50
Perform statistical analysis in physical science or geological research	71
Prepare reports	8
Prepare technical reports or related documentation	22
Understand properties of gases or liquids	78
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use hazardous materials information	35
Use knowledge of investigation techniques	16
Use mathematical or statistical methods to identify or analyze problems	30
Use physical science research techniques	68
Use quality assurance techniques	61
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17
Work as a team member	36

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 74

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Engineers (17-2131)

Tools and Technologies	Exclusivity
Business function specific software	1
Chemical evaluation instruments and supplies	10
Chromatographic measuring instruments and accessories	16
Computers	1
Content authoring and editing software	1
Data management and query software	1
Electrical measuring and testing equipment	7
Electrochemical measuring instruments and accessories	9
Filters	30
Fluid mechanics equipment	11
General laboratory glassware and plasticware and supplies	13
Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Laboratory baths	24
Laboratory blending and dispersing and homogenizing equipment and supplies	27
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory centrifuges and accessories	13

Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory electron and solid state physics equipment	29
Laboratory enclosures and accessories	17
Laboratory furnaces and accessories	26
Laboratory heating and drying equipment	13
Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Laboratory pumps and tubing	23
Light and wave generating and measuring equipment	4
Liquid and gas flow measuring and observing instruments	15
Mechanical instruments	14
Pressure measuring and control instruments	10
Safety apparel	4
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Vision protection and accessories	3
Water treatment and supply equipment	21
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.